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LETTERS TO A COLLEGE GIRL

ELLEN HAYES



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# LETTERS TO A COLLEGE GIRL

BY

ELLEN HAYES

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So enter  
that daily thou mayest become more learned and thoughtful.

So depart  
that daily thou mayest become more useful to thy country and  
to mankind.

*Inscription on the WHITE Gateway, Cornell University.*

Truth is a thing to be shouted from the housetops, not to be  
whispered over rose-water after dinner when the ladies are gone  
away.—W. K. CLIFFORD.

That great social duty,—to impart what we believe, and what  
we think we have learned.—HARRIET MARTINEAU.





## FIRST LETTER.

CAMP ALCYONE,  
*Nineteen hundred and x.*

DEAR MARGARET:

Yes, I approve, although for some reasons I wish you were going with your brother to your father's university. Since a decision has been reached, we need not now discuss those reasons. Neither will we talk about the preparation you have made. Beyond a doubt it might well have been somewhat different; but there was no course left you except to meet the requirements at present specified by colleges. Let us look forward and plan for the years ahead rather than review those of the high school from which you have just been graduated.

In entering a college, any college, you are in reality joining a club. One distinguishing feature of membership is that you are to leave home and reside at your club quarters for most of the time for four years. What you hear called "college life" is merely the special variety of social activities that characterize the community you are about to enter. From what

you write I see that you are looking forward to it with eagerness. You think that residence in the great home of the club will afford you opportunity for "good times" that you have never yet enjoyed, happy as your home life has been. I am not going to under-rate that good time. I am glad it is coming to you. Every one ought to be glad that some hundreds of girls here and there are finding the happiness of the large comradeship that a college affords. This world has not been kind to girls. It has made life hard for them for more thousands of years than history exactly knows. They have been denied freedom and knowledge, they have had to please and obey; and at this present hour the vast majority of them are so restricted that they are little better off than slaves.<sup>1</sup> Do you remember in Miss Scidmore's *China: The Long-lived Empire*, the account of a visit to a provincial yamun?—

What did they have to talk about, these helpless, crippled women with their scores of maids, spending all their lives on the hard chairs, hard beds, and hard floors in these cheerless rooms, looking on stone courts and blank walls? Without exercise, incidents, books, occupation, or any social excitements save these stilted visits in closed sedans, it seemed a dreary prison life at best, and the oppressive idea made us long to escape from the harem's walls.

What kind of a life do you suppose the Chinese regard as an appropriate preparation for the women's years as thus described? But you do not need to go to China for dark pictures of the lives of girls and women. They may be found in every land, including your own. The truth is, you are one of the girls, comparatively few in number, who have escaped into liberty. You may learn what you please; you may go where you please; you may marry or not, as you please. Some day it will be well worth your while to set to work and find out how it comes that you are thus fortunate. It is a long story.

"Thoughts that great hearts once broke for, we  
Breathe cheaply in the common air."

Do not imagine, however, that you are a free human being to the extent that your brother is. In a later letter I may explain what I mean by this warning. Just now I am bidding you be glad of the coming college life.

There will be snow-shoe clubs and hockey teams, papers to edit and class politics to "dabble in." Take your share of it all. For instance, you enjoy theatricals. I recall your dramatization of *Lochinvar* when you were eleven years old. Others like you will combine for that kind of fun. Play Orlando or Sir Lucius

O'Trigger, if you wish; join the golf club; accept a class office, if it comes your way. Do any of these things—provided. Provided what? I hear you ask.

First of all, do not forget that your health is a most precious possession. Just to *feel well* is a fundamental source of happiness. You will certainly be defeating yourself if for some present pleasure you endanger or impair that good health of yours. You need plenty of sleep. Some persons never seem to be quite awake or wholly asleep. Do sleep so that when you are awake you may be wide-awake. It is not hard to find out when and what you ought to eat. Experience and the lecturer on hygiene will give you temporary directions that must serve until you elect physiology. As for clothes, woman's dress has been declared "the disgrace of civilization." It truly is. A class of persons none too strong at best persists in a mode of dress that still further impairs their strength, and consequently diminishes both their happiness and their efficiency. Get into your gymnasium dress and then frankly say what you think of the long, entangling skirts from which you are for the moment free. Enter for the college relay race or a ride into the Grand Cañon by the Bright Angel trail, and see how the managers rate your conventional costume.

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It may be said that we walk rather than run through life, and a cañon trail is not our usual thoroughfare. Well, watch yourself going upstairs with an armful of books, or crossing a street on a windy day, or performing any of the common acts that may reasonably be expected of persons having arms and legs. The introduction and establishment of a mode of dress suited to the modern civilized woman is one of those major reforms which we must await with what patience we can command. In the mean time we ought to avail ourselves of such relief as the proprieties permit. If the skirt must be a long, harassing gear, it may be reduced to a minimum number of pounds, and it may have pockets. One can move in good society in low-heeled shoes, and even wear a cap in a snow-storm without inviting remark. Of course, a whole book could be written, many have been written, on this subject of health preservation; and I am only writing a letter. Let me just add that club life carries its own penalty. You are a member of a crowd. To hold on to yourself becomes an urgent duty. Nothing will satisfy your nerves except such consideration for them that you may never know you have any. If you cannot assume the rôle of Portia or edit a paper or preside at a class meeting without nervous excitement, let

Portia and the paper and the class take care of themselves. And in any case, all these matters together merit only the merest fraction of your time and energy. There is a region on the moon named by Galileo *Mare Serenitatis*. On this earth also, for those who search, there are seas of serenity. Camp out on their shores, come what will.

## SECOND LETTER.

Your freshman letters remind me of Alice's singing "*Here we go round the mulberry bush.*" It is a long, long time since you joined the club. Upper class students have evidently been trying to make you "feel at home," and to that end they have instructed you in the content of college life—as they view it. But is "college life" the whole life of a college? Concerts, suppers, theatricals, games, receptions, serenades, society-house parties, athletics,—do these in your pre-collegiate impressions and freshman vistas make up the bulk of the club's doings? Are these matters in the aggregate the purpose of the plant that people call a "Foundation for Learning"? It would almost seem so if we are to judge not merely by students' letters, but by published reports in papers and magazines. One wonders whether it would not be franker and more economical to eliminate altogether certain other features,—a curriculum, requirements for the B.A. degree, laboratories and libraries. There might be some art lectures and music lessons and instructions for reading modern

novels, but nothing that should seriously interfere with a glorious four years of fun. It is a fact, however, and not at all surprising when you come to think about it, that the very persons who most eagerly give prominence to the social part of their student life would most strongly resent trimming a college or a university down to the lines of a summer hotel. They recite with some pride the names of eminent professors of the past, even though they have little "use for" the greatest teachers of their own time. They want somebody to study, though they themselves have no intention of making any personal contribution to the intellectual life of their school. They have bargained and paid for the distinction of an academic connection, and this no ordinary social club could give. To the stately robe of learning they cling for prestige and for a sweet sense of superiority to common men and women who could not go to college.

What you write about the societies and other organizations leads me to repeat here something that I took occasion to say elsewhere not long ago:—

The unpeaceful activities of the community have invaded the college. Exponents of Movements, Reforms, Causes, appear at all academic gates, eager to inherit a land of so much promise. They frankly avow their desire to "interest," to "enlist," to



organize, students. With no intention of doing injury, representing movements perhaps very good in themselves, these propagandists make damaging inroads on time, energy, strength, and feeling. Their argument is plausible, their plea for "workers" impressive. The student in the woman's college is made to feel that now, without delay, she should be an active sharer in the movements astir in the world. Under a mistaken conception of "service" she readjusts her ratios of academic and non-academic engagements. There is a convention, a "rally," and she rallies. There is committee work, and she hastens to obey a committee call or to call a committee, as the case may be. "To meet people," "to learn how to do things," "to broaden her life by knowing something besides books,"—these specious arguments too often chime in with her own desires and appeal to her as wisdom and common sense. And never for one little minute is she assailed by the suspicion that these intrusive enterprises of her college life are not worth her while. She does not know the cost of her various social efforts, nor will she ever know. To be permanently incapable of perceiving her mistake is part of the cost. It is readily admitted that a student should be informed concerning modern social movements. The main facts of their origin, purpose, growth, and prospects, may well be considered in a course in sociology; but this is by no means the same thing as engaging practically in them. What usually happens is that the student is induced to take part in the work of a given movement while remaining ignorant of its genetic antecedents and relationships. The same person later, when out of college, will with alacrity help to engineer a charity ball, but she will quite fail to study the deep-lying conditions that

have made her charity ball an apparent necessity. We do not want, on the one hand, unpractical students retiring to a corner to read Plato and Goethe in the original, pedantic rather than intellectual; nor, on the other, restive young persons who patronize as much of the world as they can reach and call it "ministering." Let us have rather those who are modest and far-seeing enough to spend four years in serene, unhasting preparation. The battle will keep. Sorrow will not be gone from the earth, neither will ignorance nor injustice by the time you are really ready for the fight. If the above charge can fairly be brought against the nominally serious and unselfish student efforts for the betterment of conditions in the world, what shall be said of those activities which are designed to give pleasure for the hour and which constitute so much of the charm and fascination of college life? If no colleges existed, the society as an organization would still be found throughout the world and would not lack for ready and eager defenders. But no defence can clear away the fact that the formation of a group within the group is in reality an expression of primitive anti-social tendencies. To create an inside, with a correlative outside; to establish an exceptional status for the chosen, and hence to control benefits, privileges, positional superiority,—this is the main element in society organization and membership. The society is essentially retrogressive, even when honestly designed to promote progress, and it would go to pieces in any community that could fairly grasp the idea that there is one brotherhood whose membership is all mankind. College societies are no exception. Indeed, they exhibit in aggravated form the distinctly anti-social features of organizations in general. They

could not exist in a college that had a vision of the ideal relation of its members one to another and to the community whence they came and to which they are to return. The eagerness of freshmen to join something, anything that offers, is only surpassed by the efforts of upper-class students to promote mutually exclusive, mystery-enwrapped groups. Fortunately, those precious things—culture, friendship—come at the bidding of no organization. They are not among any society's assets, to be treated like initiation rituals and fraternity pins.

And yet organizations are sometimes necessary. Have you heard the story of the women who scrubbed the Chicago sky-scrapers? They were being paid ten cents an hour. They asked for fifteen cents and a dressing-room where they could change their wet clothes before going home. Their employers scouted both petitions. Then one little woman with great labor organized the scrubbers into a union, and they went on strike. The employers could not fill their places, and the condition of the floors grew worse from day to day. The outcome was that the women got seventeen and a half cents an hour and a dressing-room in every sky-scraper.

There are in the world organizations needing whatever help you as a member can some day give, and you will need all that they can give you; but they are not of any college. This year you have probably

already been importuned to enter certain associations. Do not let any one hurry you; take time to consider the matter. Next year you may be condescendingly invited to join some society. Take more time to consider. The advantages of membership exist in theory rather than in fact; and, even if it were not so, freedom from the mere machinery of a society is a good not to be lightly surrendered.

### THIRD LETTER.

Electives! You write me that you are already face to face with that question, and you want to know, first of all, whether you had better go on with Latin, as your high-school teacher advised. How did your teacher come to give that advice? Did he look the whole field over with you, assigning due weight to each subject in a long list, or did he speak from the point of view of one whose training has been chiefly in Latin and who naturally puts that study first? In fact, does he not regard it as his business to advise Latin? Excellent teacher though he may be, I think we must discount his judgment. Latin is important; but how important? How many years have you spent on it already? Besides the opinion of your teacher, you offer two other reasons for continuing this study: you feel sure that you can do it. You would so hate to incur a "condition" early in your course, and that might happen with an untried subject. And, secondly, you may want to teach Latin some day. As regards the first reason, it is not a very worthy one. To yield to the fear of failing is to fail, to begin with. If a new

subject, possibly difficult, but certainly valuable, is proposed to you for election, elect it. The acquirement of a sound and reasonable confidence in yourself is of prime importance. As for the second reason, it is not yet certain that you are to be a teacher; and, if you are, Latin may prove to be the very last subject that you will wish to teach. Surely, you ought to wait a year or two before permitting this consideration to influence you in your choice of studies. "But must I not decide now, so that I may begin now to fit myself to teach some particular subject?" *No*. If this reply seems a trifle summary and dogmatic, I hope to make it less so as our correspondence progresses.

The Latin question is an introductory item in the larger question of electives in general. Open almost any college or university year book, and you are indeed in a wilderness. How is a beginner like yourself to find his way? or is there no way? or do many ways lead through to the further side? Let us consider.

You tell me that certain subjects are required for the B.A. degree in your college. These we may count out, since they are to be a part of your program in any case. From that part of the curriculum left—which you say is by far the larger part—what shall you

select? The elective system as it exists to-day in American colleges rests on the assumption that one subject is as good as another for the undergraduate. An immediate corollary is, the student may properly elect those subjects that attract him or that he thinks he is interested in. As a business scheme, no other system can compete with this elective system, and none survives to try. Scarcely a college from the Atlantic to the Pacific dares reject it, or even modify it to any extent. Faculties everywhere vote for it, and profess their delight in it; and, obviously, such a system must please undergraduates. Here and there a voice is raised in protest, though with small reason for hoping to see any immediate reform. The heretics remember, however, that majorities are often in the wrong; and they have the encouragement of the fact that reforms usually begin in the initiative of a few. They also have the support of an unfailing principle: "The proof of the pudding is in the eating." If the elective system is "making good," it will endure: if not, neither popularity nor authority can save it. In a wiser day it must go. "Making good,"—the phrase leads us to ask, What is it really all for,—this four years' residence in an academic club? Various and discordant answers may be heard. Without inquiring just now

what they are, let us look into the matter for ourselves. You have one life to live. Cannot these four years be used for the benefit of all the years that are to follow? What could benefit them? Briefly, whatever can make you amount to more as a human being. Not a few will assure you that your college training should continually recognize that you are a female. I beg you to try to realize that first, last, and all the time you are a human being. You may become a milliner or a doctor of medicine; you may manage a farm or establish a studio; you may or may not be "a wife and mother." All these vocations, states in life, are incidental compared with the tremendous, abiding fact that you are a human being. Those persons, whoever they are,—Luther, Napoleon, this editor, that college president,—that would subordinate the fact of humanness to the circumstance of sex or occupation, suffer from a disqualifying mental twist and moral atrophy that cancels any value their judgment might otherwise have. Unable, apparently, to think of women except as females, they abuse the authority of position and the authority of influence in denying and delaying to women the right and justice due to a being that is human.

But what is it to be a human being? On one of



those high shelves in your father's library is a volume of Hazlitt's *Essays* with this passage in it:—

To see the golden sun and the azure sky, the outstretched ocean, to walk upon the green earth, and to be lord of a thousand creatures, to look down giddy precipices or over distant flowery vales, to see the world spread out under one's finger in a map, to bring the stars near, to view the smallest insects in a microscope, to read history, and witness the revolutions of empires and the succession of generations, to hear of the glory of Sidon and Tyre, of Babylon and Susa, as of a faded pageant, and to say all these were and are now nothing, to think that we exist in such a point of time and in such a corner of space, to be at once spectators and a part of the moving scene, to watch the return of the seasons, of spring and autumn, to traverse desert wildernesses, to listen to the midnight choir, to visit lighted halls or plunge into the dungeon's gloom or sit in crowded theatres and see life itself mocked, to feel heat and cold, pleasure and pain, right and wrong, truth and falsehood, to study the works of art and refine the sense of beauty to agony, to worship fame and dream of immortality, to have read Shakespeare and to belong to the same species as Sir Isaac Newton. . . .

The catalogue is not less impressive for its length, and it indicates many of man's experiences unshared with other creatures. Dogs and eagles and butterflies live their own lives and have their own forms of happiness; but, so far as we know, they do not worship fame or dream of immortality. However,

the experiences here enumerated are for the most part those of feeling and action rather than thinking and knowing. It is one thing to feel the thrill of belonging to the same species as Sir Isaac Newton: it is something else to read the *Principia*. There is more to be said than Hazlitt has said, a long story to be told of the hesitant differentiating that carried creatures across the vague border-land of the realm of the brute animal, so that a human animal came to be. Perhaps we can sum up the outcome thus: To know something of the past and to infer something of the future; to distinguish cause and effect; to penetrate motives; to view acts as just or unjust; to seek truth and to know when it is found; to become acquainted with uniformities of nature; to be free in body to come and go, and to choose one's habits and activities; and, above all things else, to be free in mind,—this it is to be a human being. What can four college years do toward the development of a life potentially so endowed?

To begin with, do you think it likely that one subject is just as good as another for an undergraduate? Current opinion is not evidence. Is it not probable that some knowledge is worth more than other knowledge? Is it not your duty to your-

self to inquire what this most valuable knowledge is, and to make yourself possessor of it so far as time allows? Further, is it not likely that one branch of knowledge depends on another in such a way that the primary or basic subject should be learned, and learned first? I do not mean to assume the points here raised. I only put these doubts into your mind in order that you may make inquiry instead of going on in the haphazard manner permitted by the elective system. What knowledge is of most worth? What is primary, and what is secondary? What should be given precedence in order of time? It is, of course, more important for a mechanical engineer to know how to figure the stresses in a bridge than to trace the effects of the British occupation of India, more important for a surgeon to know how to proceed in the setting of a broken limb than to be able to describe the exact limits of the anthracite coal measures. I am not now referring to technical or professional knowledge, but to the common ground of knowledge that should be possessed by human beings, apart from the fact that one is an engineer, another a surgeon, another a geologist, and so on. "Knowledge is simply objective truth comprehended by the intellect." To put it in another way, it is "acquaint-

ance with the environment"; and knowledge comes to you through the senses,—yours or some one else's. The immediate products of sense-impresses, together with inferences and conclusions legitimately based on these sense-impresses, form all the knowledge that we can hope to possess. If at any time you think you have come across an exception, be sure to let me know. I shall be interested in it. Notice also the difference between the knowing part of you and the emotional part. Feeling is not knowing. I emphasize this, because, sooner or later, you are pretty sure to fall into grave error, if you permit yourself to interpret some emotional state as evidence of some objective truth. Further, knowledge is to be carefully distinguished from opinion. How do you prove your proposition? How do you sustain your theory? What are the facts in the case? Nowadays these questions indicate the test that must be met by any one who sets forth statements with the object of having them accepted as true by intelligent, thoughtful persons. Refusal to accept opinion save as it confesses itself to be mere opinion is a fairly accurate indicator of the degree of mental development reached by any individual.

#### FOURTH LETTER.

You complain that in my last letter I did not help you at all in your difficulty over electives, and you add that you suspect I am leading up to a plan for studying science. That second definition of knowledge awakens your suspicions. What is your idea of science? You wrote me once that you were having physical geography with a teacher who was in your school primarily for English, but who had to take the geography class because there was no one else to do it. She told you one day that she had never studied physical geography,—at least she could not remember that she had; but then, of course, any one could teach such subjects as geography and astronomy. You added that you knew other schools where they do that way, and your comment was, “This seems queer.” It does, indeed; but we agreed not to make unnecessary remarks about your preparatory school. Let us just say that you have not studied any science yet, and that you can therefore hardly judge either what science is or whether you will like it. Definitions do not properly come first: however, I am going

to give you one now. "Science is the discernment, discrimination, and classification of facts, and the discovery of their relations of sequence." This definition is not in the dictionary, but never mind. The modern scientific philosopher who framed it has put before us in panorama the environment which is the concern of science.

First, we have the constitution of the heavenly bodies, and their real and apparent motions to be explained. What are they, and how came they to be what they are?

Then we have the earth itself; its forms, its lands and seas, its mountains and valleys, its rivers and lakes, the winds which blow about it, the storms which fall upon it, the lightnings that flash athwart the sky, the thunders that roll among the clouds. What are all these things, and whence came they, and why are they? Again, in the constitution of the earth we find rocks with their minerals, and geologic formations with their fossils. What are rocks and minerals, formations and fossils, and whence came they?

Look at the innumerable forms of plants covering the earth with verdure—the whole vegetable kingdom on the land and on the sea; forests, mosses, and confervæ. Who shall explain the meaning of the phenomena of the vegetable kingdom?

The oceans teem with animal life; reptiles crawl over all the land; the hills and the valleys, the mountains and the plains, are all inhabited by beasts; and the air itself is populated. Who shall tell us of all the living things, and then explain life itself?

Turn to the contemplation of man, organized into tribes and

nations; man possessed of innumerable languages; man engaged in arts and industries; man endowed with reason and will; man in search of moral principles to guide his conduct. Whence came this man, and whither does he go?

Reading this, do you not perceive that it will mean deplorable loss if you omit the study of any one of these great divisions? You are fortunate if you can realize now, in your first college year, that a college gives you opportunity for some systematic acquaintance with the results thus far gained in man's efforts to solve the problems presented by the universe. The time is all too short, even if you begin without delay to avail yourself of that opportunity. Where to begin?

When you were quite a little girl you asked one day, "Why do the cars lean in when they go round a curve?" Another time you wanted to know why we took the top off the kerosene can to make the oil pour out. The proper beginning is a study of the facts involved in the answers to such questions as those two of your childhood. Physics is the fundamental science. Its principles cannot be resolved into elements which are to be referred to other sciences: other sciences find in it their foundations. It is also true that in learning physics you are not learning that which is local, temporary, or merely terrestrial. The

formal statement of its principles will endure as long as man remains a thinking, investigating, experimenting creature; and when many matters now deemed important shall have become of interest only to the archæologist and the philologist this master science will still be to the fore.

The fabrics of the kingdoms melt away; where Accad and where Carthage stood no broken pillar lifts its lonely form to mark the spot amid the desert silences. The dust and dreams of Cæsar mingle with the forgotten ashes of his slaves. But Archimedes' lever, the magnetic compass of the dynasty of Tsin, the pendulum of Ibn-Junis and Hans Lippershey's far-reaching, near-drawing tubes, the balance and retorts of Lavoisier, James Watt's labouring giants of steam, Volta's pile and Faraday's whirling magnets are possessions imperishable while civilization their fruit survives.

If your imagination pictures intelligent inhabitants of other worlds in other solar systems, you must assign to them a physics identical with the physics of this world. Inertia, momentum, kinetic energy, wave-motion, are elementary facts in the phenomena of their environment as in ours. Now I hear you say, "If physics is so fundamental and far-reaching as all this, why do not college faculties require its study of every student?" Ask the faculties. When the day of reckoning comes for the elective system, one grave



point against it will be the discreditable circumstance that, in accordance with it, students were permitted to decline to study physics if they so preferred. Men have toiled in the laboratory, languished in prison, faced torture and the stake itself to win this knowledge of enviroing nature. The consequent benefits are accepted without appreciation or gratitude.

When you begin physics, your teacher will probably set you to measuring. On the face of it, how homely and dull a task! To be engaged in a study of Hamlet's soliloquy, or Socrates' thesis that death is a good, or the dramatic signing of the Magna Charta, would seem so much more lofty and inspiring. Be patient. These matters will come in due time. This laboratory work is first because it is fundamental, if you ever lay a solid base for learning and culture. It contains in itself factors of greater value than mere learning or conventional culture. How are you going to address yourself to a task making peculiar demands for patience, honesty, and painstaking precision? Will you be afraid of a vernier or dread a logarithm? Will you say, "There! that is good enough; let it go"? Will you detest the effort to find the most nearly correct result, when you perceive that results are discordant? No, I trust not. Fidelity to the duty of using

your own senses and instrumental aids to your senses; honesty in interpreting results and in reasoning upon them; regard for the facts in a case,—these too deeply concern what we call character to admit of mental shiftlessness or even manual carelessness. Here, as in all other laboratories that you may enter for work, you are yourself a subject for an experiment, material to be examined. Welcome the test, and fail not.

Physics has a sister science, chemistry. Closely related, they are, however, not interchangeable. One cannot be substituted for the other. Have you a mind to take several years of physics and omit chemistry altogether? Long before the several years are completed your teacher, if he is himself a real student, will send you to a neighboring laboratory to learn some chemistry. Conversely, your chemistry teacher has reason to require of you some sound knowledge of physics. The relation of chemistry to physics, and the dependence of other sciences, notably the biological ones, on chemistry, as well as on physics, can be understood only after you have studied them individually and connectedly. If no other reason existed for learning chemistry, its place in daily life justifies its claim on the attention not of a few, but of all. A prudent young housewife, desirous of

having everything clean and wholesome, follows somebody's advice, and pours carbolic acid into the kitchen sink. "What is carbolic acid?" it occurs to her to ask. Resort to the Century Dictionary results in the information that it is "a substance ( $C_6H_5OH$ ) found in that part of coal-tar which distils over between  $329^{\circ}$  and  $374^{\circ}$  F. It has feeble acid properties, but in chemical structure is allied to the alcohols and belongs to a class of compounds called *phenols*. When pure, it crystallizes in white or colorless needles which have the odor of creosote and a burning taste," and so on. How satisfactory! She puts up the dictionary, pleased to know just what this useful article, carbolic acid, is. She often heard in college that you could "pick up science," and this is an illustration that proves it. Suppose we examine her. " $C_6H_5OH$ ," what does that mean? She does not know, any more than if it were expressed in the lost language of the Aryans. She can only suspect that it has something to do with chemistry; but she never took chemistry, not liking the smells of the chemistry 'lab.' And what is coal-tar? Her answer shows that she does not dream of all that lies behind that innocent-looking word, *coal-tar*. "That part of coal-tar." There

are other parts, then. What are they? And it is the part "which distils over between  $329^{\circ}$  and  $374^{\circ}$  F." What is distillation? She rather thinks that may have something to do with distilleries. And that F.? She has seen it before: it is a kind of thermometer, though for some reason hers is not graduated up to  $329^{\circ}$ . "The carbolic acid has feeble acid properties." What is an acid property? "It is allied to the alcohols." What are they? "It belongs to a class of compounds called *phenols*." What is a compound? What is a phenol? "It crystallizes." What is crystallization? And, finally, what is creosote? To each and every one of these questions she has to say, "I do not know." You will agree with me that in spite of her dictionary she cannot "pass" in carbolic acid. Perhaps you will say it is unkind to pitch upon any subject as difficult as carbolic acid to use in tripping up a person. It was a random choice. Anything else—a pinch of salt, a cake of soap, a piece of chalk—would do. Try salt or soap, and see whether she comes out of the examination any better,—this young housekeeper, who specialized, perhaps, in Romance languages. The dictionary has answers, of course, to the above questions; but the answers involve more questions,

so that he who goes "picking up" chemical knowledge gets deeper and deeper into the mire in the struggle to escape intelligently from the first question. I admit that the carbolic acid will clean the kitchen sink just the same, even if the kitchen manager is fashionably ignorant. Nevertheless, on many an occasion her ignorance will result in annoyance or disaster.

But, after practical considerations have emphasized the value of chemistry,—since it is essential, in large ways and small, to modern civilization,—it is found to merit further attention because it constitutes one great section of man's acquaintance with his environment. Do not let the molecule, marvellous in character and behavior, slip through your fingers while you are thinking of something else.

## FIFTH LETTER.

Replying to that last letter I wrote, you remind me that there are other sciences besides physics and chemistry, and you ask what you had better do about them. What do you think you had better do? Read again my long quotation from J. W. Powell. Can you mention any class of phenomena with which you are willing to remain wholly unacquainted? Suppose yourself an inhabitant of a planet belonging, let us say, to Fomalhaut or Deneb. We have ample grounds for believing that you would find physical and chemical phenomena the same there that they are here. A prism would refract light there as it does here; oxygen would unite with carbon there as it does here; and you would find your planet, if undisturbed, moving around its primary in an elliptic orbit. That is, in any world where ether is a medium for wave-motion, where the gravitational stress exists, where heat flows from a hotter body to a cooler one, where chemical elements are present, the experiences making up the life history of that world must be generically what they are here. On the other hand, we may well doubt whether any

other planet has had, in detail, just such a career as our own. The deeps of the oceans, the peaks of the Andes and Himalayas, the Amazon and the Nile, the Grand Cañon and the Gobi Desert, are individual and characteristic features. How did they come to be?

In the sixteenth century a Dane, Peter Severinus, gave some advice in this impetuous fashion:—

Go my sons, sell your lands, your houses, your garments and your jewelry; burn up your books. On the other hand, buy yourselves stout shoes, get away to the mountains, search the valleys, the deserts, the shores of the sea, and the deepest recesses of the earth; mark well the distinctions between animals, the differences among plants, the various kinds of minerals, the properties and mode of origin of everything that exists. Be not ashamed to learn by heart the astronomy and terrestrial philosophy of the peasantry. Lastly, purchase coals, build furnaces, watch and experiment without wearying. In this way and no other will you arrive at a knowledge of things and their properties.

Men have taken the advice. Some of them, outfitted with hammers, compasses, maps and barometers, as well as "stout shoes," have got away to the mountains: they have searched the valleys, the deserts, the shores of the sea. Hardships and risks have not daunted these intrepid geologists. The result of their

labors is to-day a wonderful history of the earth's life. Compared with Jupiter or Saturn, this is not much of a planet; but it is your own home planet. Will you feel quite satisfied to go up and down it for some seventy years and remain deaf to the long, long story, blind to the pictured page? You are planning to visit, some day, the Yellowstone Park and the Alps. However much you may think you enjoy those regions, you will see, but understand not, and your enjoyment will be far less than it might be if you fail to study geology. Even if you never travel, you cannot find a spot to live in that is unconnected with a history whose backward reach is measured in terms of millions of years. Erosion and deposition and peneplain, anticline and syncline and fault, water-worn pebble and embedded fossil,—what are these and what do they signify? Do you think that ability to speak French and German will in any degree make up to you for ignorance of the language of Mother Earth?

But your planet is not merely a world of compressed rock and running waters, of storm and earthquake and lava outpour. It is a world of life. Forests and plains, hills and valleys, ponds and oceans, and the air itself are populated. The phenomena of life, whether the life be manifested in animal or vegetal forms, are



peculiarly complex. Problems of structure and function and nourishment, of distribution and habitats, of variation and adaptation, have called for all that one may muster of patience and intellectual effort. Other sons of Severinus, the botanist and zoölogist, have been not less faithful and brave than the geologist; and out of their labors have come the great life sciences. If you will take that general course in zoölogy and that first year of botany, you will secure at least an introduction to those sciences. Tell me afterwards what you think of the fortuitous device known as the elective system whereby you might so easily have missed it all. "But it has a lovely blood-vascular system," said a zoölogy student once to a companion who expressed disgust at the sight of an earthworm on the sidewalk. Some real study at a laboratory table makes a surprising change in persons who had before felt only contempt for the lowly forms of life. This change alone is worth all the cost of a zoölogy course,—the equipment, the time, the instruction of a skilful teacher.

The study of the human body, following directly upon the study of general zoölogy, has its own peculiar claim to make. We are in a world where the living organism is invaded by disease and pain, and

finally by death. How can pain be averted or lessened; disease mastered or, better, forestalled; death's coming delayed? There are many people, even to-day, who think it is not quite "nice" to know about one's own body. The medical practitioner and the investigator may with propriety study tissues, organs, and physiological processes; for the laity, however, an assortment of hygiene maxims and rule-of-thumb directions is deemed sufficient. "You must," and "you must not." But an epidemic of typhoid fever in a community is a stern teacher; and, before it departs, more than one troubled learner wishes he really knew something about stomachs and intestines. It is quite time that the day of dogmatic hygiene were brought to a close. Can you explain to a ten-year-old boy why he must not shed his usual winter underclothing some raw April morning? Do you know enough of the structure of the human foot and the human back to really make it clear to your younger sister why she must not wear those dear high-heeled shoes? Do you even understand exactly why your sleeping-room windows are to be kept open at night? Until you can deal intelligently with these questions, you may very properly postpone acquaintance with pre-Shakespearian drama.

It is an abrupt transition from the studies that relate to the care and comforting of these human bodies to the study of suns and planets. Astronomy is spoken of as the oldest and grandest of the sciences. How old is it? Its dawning antedates, perhaps, the mechanics of the men who raised monoliths in the desert before there was a sphinx to keep guard. It may be older even than the agriculture of the one who first purposely strewed a handful of wild grain outside the entrance to his cave or prehistoric wick-iup. But mere age is not sufficient reason for the honor accorded to this science. Its true nature and claims are set forth in these words by the author of the *Mécanique Céleste*:—

Astronomy considered in its entirety is the finest monument of the human mind, the noblest essay of its intelligence. Seduced by the illusions of the senses and of self-pride, for a long time man considered himself as the center of the movement of the stars; his vain-glory has been punished by the terrors which its own ideas have inspired. At last the efforts of several centuries brushed aside the evil which concealed the system of the world. We discover ourselves upon a planet, itself almost imperceptible in the vast extent of the solar system; which in its turn is an insensible point in the immensity of space. The sublime results to which this discovery has led should suffice to console us for our extreme littleness, and the rank which it

assigns to the earth. Let us treasure with solicitude, let us add to it as we may, this store of higher knowledge, the most exquisite treasure of thinking beings.

And yet the majority of students decline to study astronomy. It might prove difficult, and—disturbing thought—it might have some mathematics in it. These same students cannot give an intelligent account of the cause of the change of seasons; they cannot give any account at all of their own watches as the astronomical instruments that they are. They cannot tell Jupiter from Sirius; and as for the stars as suns with attendant worlds, their sizes, distances, motions, and constitutions; the galaxy, nebulæ,—what claim have these things on persons absorbed in the little play of their brief hour?

## SIXTH LETTER.

In what has gone before I have spoken of science only as a body of knowledge, the achievement of the human intellect in discerning, discriminating, and classifying facts, and in discovering their relations of sequence. But, in so far as science is presented to you for study in college, quite half its value resides in the *method* of science. What is this method? In outline it is this: A fact, or group of facts discriminatingly classified, claims the observer's attention. Viewed as an effect, it is required to find antecedent facts which have operated as cause. A hypothesis—that is, a provisional solution of this causal problem—is framed: perhaps several are framed. Then more observations must be made or experiments performed, to test these hypotheses. Material must be impartially collected and justly dealt with. Conclusions must not be drawn until warranted by the evidence. No hypothesis may pass to the status of explanation or of law until it stands all the tests that can be devised. The truth, without regard to the labor involved in attaining it and without regard to the consequences,

is the dominant consideration with every real scientist. The obvious mental advantage of scientific training is, therefore, one in behalf of the powers of observation and judgment: its moral advantage consists in impressing the lesson that truth is to take precedence of all else,—our schemes, our tastes, our desires, our prejudices. If to seek truth and to know when it is found is a mark that pre-eminently distinguishes a being as a human being, the scientific method permits no comparison with other methods. There are others. You have only to watch the politician, the theologian, the metaphysical philosopher, the literator, to perceive what the other methods are. Do not misunderstand me. Science has no infallible recipe for making superior persons out of hopelessly inferior material. It is not difficult to find students and teachers of science who are to the last degree unscientific. They are called botanists, physicists, astronomers, and so on; but their lives, professionally and socially, exhibit bias, prejudice, and partial judgments. The power of calm comparison and estimation of evidence seems to be largely, if not wholly, lacking in them. Yet I must affirm that, if physics, rightly studied, does not make a person accurate, nothing will; if botany, rightly studied, does not lead him to observe, nothing

will; if geology, rightly studied, does not train his reasoning powers, nothing will. If all of these together do not lead him to set truth above everything else, it will probably be in vain to invoke other agencies.

“Is not mathematics as important as science?” I note this question in your reply to my last letter. Let us consider.

In the curriculum of a well-known university the prerequisite for one course in mathematics is stated as “a certain facility in abstract reasoning.” The framer of the prerequisite had a right to use any word he chose, but he had no right to employ one in an unusual sense without explaining. Mathematics does not require “facility in abstract reasoning,” as the term reasoning is generally understood; nor does the study of mathematics cultivate the power of reasoning. In its realm there are no evidences to be gathered and weighed, no hypotheses to be framed, no causal relations to be searched for, no laws of nature to be disclosed, and no deductions to be made from such laws. That is, the opportunity for such training as science affords is not afforded at all by mathematics. “We train your reasoning power ‘while you wait’ in the mathematical class-room” is one of those standard announcements passed on from one generation of

teachers to another: it is zealously recited by persons who, whatever they may know in mathematics, have plainly never given any thought to comparative logic.

Nevertheless, you should, by all means, learn some mathematics. Fortunately, it is the easiest of subjects to do alone. No libraries, no laboratories, and—I might almost add—no teachers are required. Neither need you be afraid of missing the way in its so-called reasoning. If you run against any serious obstacle, the fault is probably in the text-book. Lay it aside and try another on the same topic. Among the elementary indispensable branches I should put the calculus. You ought to know enough of this language to be able to read some of the “rhymes of the universe” that are written in it. Take a couple of hours each morning next summer, you and your brother, and you can do enough calculus to serve all ordinary purposes. But beware lest you use up your time in merely acquiring a fatal facility in working exercises. Find some real examples relating to falling bodies, to the path of a baseball, to the energy of a fly-wheel, and the value of the calculus, as an aid in exact science, will need no further emphasis. The pathetic feature of study in pure mathematics is that the student not only has no idea what it is all for,



but he is rather proud of the notion that it is not "for" anything. To be sure, so far as any one knows yet, much of it is not; but some of it is. Under the time-honored method the young mathematician adds page to page and chapter to chapter, and he is as one breaking stones on a road that for him leads nowhere. Gamma functions and Fourier's series, he is impressively assured by his teacher, are used in science. Where and how he never finds out, because in his eagerness to specialize in mathematics he has failed to learn even the rudiments of the sciences that invoke the aid of an integral or a series. The undergraduate mathematical "specialist" is looked upon with peculiar awe by his companions. The admiration commanded by his supposed performances exceeds the admiration that would be caused if, for instance, he read Arabic or could stand on his head in the gymnasium. Meanwhile, under the workings of the elective system, he is probably ignorant of the Laws of Motion—not to mention several other laws that it might be to his advantage to learn.

You tell me that your freshman teacher advises you to continue mathematics. That is, it is suggested that you may become one of the mathematical elect. Why this advice? The Latin argument over again:

you can succeed in mathematics, and you may want to teach it some time. You will recall my letter concerning Latin. However, I must add a word further. Suppose you do some time teach mathematics, let us say the algebra and geometry and trigonometry of a high school. In the sequel you will understand, if you find it difficult to believe now, that pure mathematics is of small use to you in preparation for that work. It is all-important that you know algebra for what it really is,—a language, unrivalled for compactness and freedom from ambiguity, for expressing quantitative propositions and conducting quantitative discourse. There can be little doubt that the difficulties and disgusts, the hours wasted, the failures incurred, in its study, are largely owing to the grievous lack on the part of the teacher, and the text-book, of any insight into the true character of algebra. Geometry has its own peculiar ill-treatment to cry out against. It is rendered formal and unreal, a matter of blackboard diagrams, because sight is lost of its natural office,—the expression of linear relations in our actual environment. These difficulties will never be reached and overcome by more and higher pure mathematics, but by a practical preparation on the teacher's part through study

of those sciences in which algebra and geometry are used. A sound first-year course in astronomy will incidentally invest solid geometry with an interest and obvious value that it cannot possibly otherwise acquire. Devise a diagram of your own to prove that proposition in Appendix J of Davis' *Physical Geography*, "If a body revolves without rotation, every part of it is subject to equal and parallel centrifugal forces." Begin now to make a collection of all the problems of this sort that you can find. Practical questions in physics will go far toward rescuing algebra from its present detested status.

I had slowly counted 12 when we heard a low thud, as if the rock had struck the edge of the cliff, then a fainter and fainter echo till the last rumbling seemed to die away in the depths of the nether world.

What was the probable depth of the barranca where the basalt boulder was rolled in? When you come to teach, give your boys and girls this from a real book of real travels, and observe its effect on their opinion of quadratic equations. The algebra book is yet to be written in which the author's first endeavor shall be not to make the book merely "interesting," or easy, or exhaustive, but to reveal to its readers the common-sense of algebra.

## SEVENTH LETTER.

You write that English is given an important place in your college. "There are many courses, and they are extensively elected." Yes, English is a favored and fashionable study. Yet some lookers-on are filled with private wonderment and questionings. How pleasant it would be if, upon shaking this great, spreading English tree, fruit came down of a quality to justify so much planting and watering and tending! But would any one guess that students were receiving all this elaborate training? Listen to their conversation! It betrays a meagre vocabulary and awkward construction, inability to describe off-hand with vigor and accuracy even the simplest thing, or give a forceful, compact account of the plainest matter. You may reply that "English" is a training in writing. To what end? A person usually communicates with his fellows by speech; yet the elaborate curricula do not include a single practical course in conversation. If it is assumed that he who can write will consequently be able to speak well, the facts do not seem to sustain the assumption. And then, alas!

they do not write well,—the young people in whose interests the English composition courses are presumably conducted. In spite of painstaking and skill on the teacher's part, composition work is bound to be disappointing in the outcome, and this for two reasons: English study alone cannot give the student anything to say; and, even if it did, it cannot make him say it. If you ever have thoughts worth expressing, they will spring from soils outside of mere language territory; and, if you express them well, it will be because you resolve to do so. Let me suggest that you make such a resolve. Play a solitary game to get a working command of vocabulary and construction. There is opportunity every time you talk. You will need to play the game guardedly. The person of commonplace expression will be quick to detect and resent the intrusion of anything unusual into conversation. But try! Keep at this self-imposed task of acquiring such a command of your mother tongue that you may habitually use the right word and habitually frame simple, clear sentences. If you can achieve this in conversation, you need not be anxious over any writing that you are called to do. For the purposes of both writing and speaking there is probably no better rule than the one suggested

by Darwin's practice. "When a sentence got hopelessly involved, he would ask himself, 'now what *do* you want to say?' and his answer written down would often disentangle the confusion."

Just as it is a relief to realize that we are not obliged to hold and express opinions on all subjects, so, with a sense of going free, it some day occurs to us that we may think more than we talk, omitting altogether what is mere chatter. "Have you no wit, manners nor honesty but to gabble like tinkers?" This sentiment is already written conspicuously on one academic wall. It would be becoming to others. Try to cultivate wit and good manners and good English by seemly and fruitful silences.

Before you meet the requirements and get clear from the entanglements of the English wing of the curriculum, you are likely to be overtaken by the ambition to write a "short story" for your college paper. If that species of fever attacks you, I hope it may be as short as the stories you write, and I further hope that your story will not be accepted. One story in print will retard your recovery, and to be writing short stories while you are a student is several degrees more deplorable than reading them. Reserve story writing for an amusement in your later years, a variation from the patchwork and cribbage of old ladies.

May I add a word about English literature, since you tell me there are very large classes in literature, and you are a member of one of them. To these classes the professor lectures, and you take notes. It is a pleasant and possibly a valuable exercise—for him; but what is it for you? Most of what he says is opinion as distinguished from fact, and you are a sponge soaking up his opinions. The more you admire your lecturer for his ability and respect him for his learning, the greater the danger that you will simply absorb his ideas instead of developing any of your own. The young and immature—I suppose I may imply that you are young and immature—are the ones who suffer most when subjected to a deluge of other people's views. "Views," opinions, speculations, do not afford the mind its natural or suitable food, and it is on this ground that objection must be made to much that is presented in literature and philosophy classes.

To be telling you what books to read and what the books mean is part of the mischievous system kept going by well-intentioned persons who desire to improve their neighbors, especially their young neighbors, by telling them what to believe, how to behave, and how to be happy. Literary paternalism is as bad

in its way as governmental paternalism. If another can lend you a hand in getting an understanding of the binomial theorem, for example, or Avogadro's Law, or the precession of the equinoxes, very well; but it is not well when any one undertakes to impart to you an understanding or "appreciation" of literature. You were a fortunate child if you escaped moralizings on *Robinson Crusoe* and interlinear readings of *Water Babies* and a parallel exegesis of *Pilgrim's Progress*. Curled up on the big lounge in your father's library, you enjoyed stories and poems. In due time you find out for yourself the significance of Tweedledee's view of Alice's relation to the Red King's dream, and the full import of

"There was once a little animal,  
No bigger than a fox."

And you are fortunate to-day if no one comes between you and an author. For example, after you have read and re-read Walter Scott at intervals of years, and have at length some home-grown ideas about his writings, you may, for purposes of comparison, not substitution, take a look at Chesterton's essay. Do not on any account read the essay first. Read and study Scott. The same is to be said of every other merely literary author who is worth reading at all. Read him. Do



not read books or listen to lectures about him. The authors of *Rob Roy* and *Pickwick Papers*, of *Henry Esmond* and *Romola*, of *Les Misérables* and *War and Peace*, wrote for you. So also did the authors of the *Ode on the Nativity* and *King Lear* and the *Rubáiyát*, of the *Spectator* papers and *Sartor Resartus*. They were willing to have their books taken for what any one could get out of them. That these books should be assigned as tasks for "critical study" is perhaps sufficient explanation of the fact that among students the distaste for good literature is as marked as the inability to speak good English.

The above advice is merely part of a more general warning. Are you hanging pictures on your walls because you hear them praised and other people have them? Are you going to concerts to hear music that is said to be fine, and speaking enthusiastically about it when you don't really care for it? Are you studying Shakespeare and Browning because the other girls do? You must stop all this before your life can become wholesome and sincere. There is no short cut to culture any more than to learning or wisdom. Other persons cannot do your feeling or your thinking. Only with the slow growth of years, long years after you are out of college, can you attain that richness of life

that is popularly supposed to be the easy achievement of a brief period of undergraduate study. The only regard for pictures, for music, for architecture, for scenery, the only interpretation of literature, that can be of real value to you is your own, and your own depends on temperament, on knowledge, on experience, on reflection,—yours, not somebody else's.

As for the facts brought forward in literature study, —names, dates, sources, alliances, influences,—most of them are of relatively small value. Others might acquire more value if the historical background to which they belong were itself recognized in its relations to what underlies all history,—the facts and principles considered in the complex science of sociology. Genetically viewed, literature is merely a by-product of sociological phenomena, and, when teachers of literature become students of sociology, a corresponding treatment of their subject may be expected.

The present meddlesome, harmful analysis and interpretation of literary material is by no means confined to college lecture rooms. There are platform favorites who revel in expounding Dante, Browning, Walt Whitman, Stevenson,—any author that comes handy, apparently; and a crowd of persons in pursuit of ready-made culture admiringly listen. Some years

ago an English explorer achieved the first ascent of Tupungato, a lofty and all but inaccessible peak of the southern Andes. With exceptional daring and under circumstances of extreme hardship, he reached the summit and returned in safety. A few days later, at a valley inn, he found a host who had been there many years, and "knew all about the mountains." Tupungato was mentioned, and he said: "Oh, yes! Tupungato. My son knows it quite well. He has ascended it many times with ladies from my hotel." Do you beware of the nimble and fluent lecturer who claims to explore dangerous heights "with ladies."

Before closing this letter, may I add a word about the lecture method of instruction. I wish I could tell you to avoid courses in which it is used, but they are probably too many and too generally distributed throughout your curriculum. In a graduate school the lecture is, perhaps, necessary. In a class of undergraduates it wastes time and evades furnishing the training that the young student sorely needs. The teacher who chooses this method knows that the formal lecture gives him an imposing appearance before a class, and that it is the easiest way to get through the hour's work. But *telling is not teaching*. When your college days are ancient history, you may remember

that Mr. A was a brilliant lecturer, at least you thought so at the time, though you recall very little of what he said, and your note-book is permanently stored away in the attic. It is just as well that those discourses have shrunk to a sentence or two. On the other hand, it is the patient, unwearying teacher that you will hold in grateful remembrance: the one who stood by you in the laboratory and advised you to look again and make another sketch, or the other one who used to ask, now and then, a suggestive question, not so much to "draw you out" as to lead you to turn inward to the mind's hidden homestead where alone it can thrive and grow.

## EIGHTH LETTER.

It appears that you must now choose one or two principal subjects, and you ask me what to choose. I quote from your last letter. "I have to decide by Saturday morning. Most of the girls specialize in 'lit' or language. You write as if I ought to study everything excepting literature and language. But, if you take so many subjects, they say you are shallow and superficial; that you have breadth without depth; that you have scattered your efforts and wasted your energy and done nothing with thoroughness. First-year courses are despised because they are mere introductions. You must do consecutive work in some one department if you hope to be scholarly. All the upper-class students are making extended critical studies in chosen lines. At least, they say they are. Now what shall I take for my specialty? Do advise me by return mail."

I knew you would be writing this letter. I have been expecting it for months. It is only too true that college students are permitted to think that they are specializing. Even the term "research" is sometimes

used in connection with their efforts. Because I believe in specializing when the time is ripe, I must deny that it is desirable or possible for immature and uninformed persons. The worst of all smatterers is he who, on account of his ignorance on the right hand and on the left, is unable to appreciate or even detect relationships. It is prerequisite to genuinely intensive study that foundations shall be laid in the rudiments of many subjects, and this is the chief business of your undergraduate life. Get just as many of those "mere introductions" as you can. Look out in every direction. Remember that, if the first year of a subject seems to be lacking in opportunity for "thoroughness," it is the fault of the treatment, not the fault of the subject or the year. You will doubtless be called "superficial" by your companions who study French and German for years, and at the end know little of any value to talk about, even in their own tongue. You will be regarded with pity by seniors who are giving "special" study to some subject whilst ignorant of indispensable antecedent subjects,—doing experimental psychology, for instance, though ignorant of both physics and physiology,—and you will apparently be distanced in the race by brisk experts who can read, let us say, a book like Wells' *Modern Utopia* over

night, and be ready the next evening to give a critical analysis of it. But never mind! Ten years hence, when the comparison is made between you and your classmate who did so much consecutive work in one or two departments, you need not be the one to suffer. She will have well-nigh forgotten what she researched, and there will be little else by way of supplement. You, I hope, will at graduation know the elements of a considerable number of subjects, and will be fairly able to decide what you wish to continue to a really advanced point. You remember you thought you might like to be a Latin teacher, and therefore felt that you ought to devote yourself to Latin. It may turn out that something in that first year of economics leads you to consider studying law, or perhaps your one year in geology and that general course in zoölogy results in a determination to study palæontology. We do not know yet. We only know there are grave risks of never coming to your own as a scholar unless you have a fair chance now, and the fair chance means a step across the threshold of many open doors. However, I hear you repeat: "Yes, but I must have a principal subject. I cannot get through college without it." Very well, take history. I hasten to add, reduce the hours to the least number allowable, and do not en-

gage in the work as if you were going to be a historian. So far as possible, let your history be the story of human activity, all forms of activity. To indicate what I mean, I may say that I should not pass you in this subject as a major one unless you are tolerably familiar with Whewell's *History of the Inductive Sciences*, Draper's *Intellectual Development of Europe*, and White's *History of the Warfare of Science with Theology*. If academic courses in history take no account of these works, you can, nevertheless, read them by yourself. I do not now recall whether you have ever expressed any particular liking for history. From what I have written before, you are prepared to hear me say that your likes and dislikes are not germane to the question. History, in the large sense in which I am using the term, is indispensable. I assume, therefore, that in duty to yourself you will study it.

The protagonists of those who introduced and established the elective system must have hours of misgivings if they ever look at the shipwreck made in the individual courses of study of many who receive the baccalaureate degree. Any fault possibly chargeable to the system is supposed to be guarded against by that companion scheme,—consecutive study in one or two subjects. And the “one or two subjects” may be



whatever the student fancies,—philosophy or literature or even music. Proportion, perspective, present discipline, future values,—all these are ignored, and the student little suspects how he has defeated his highest intellectual interests. The elective system, if not responsible for the affectation of scholarship and pretentious display of youthful “intensive study,” affords every opportunity for it. Worst of all, it renders possible a leisure-class curriculum, largely made up of studies whose least fault is that they are mainly ornamental. Students arranging personal courses of study of this type give notice that they do not need to acquire knowledge of any value or training of any rigor, for they are not planning to be of real use in the world. They are members of the exempt and privileged order who toil only at play and spin only the entangling strands of self-indulgence. One may well ask whether it is not the immediate duty of the high schools of the land to refuse any longer to serve as preparatory schools for colleges with conspicuous leisure-class curricula, and to supply in the high schools themselves a course of study that shall meet the needs of the people to whom these schools belong.

## NINTH LETTER.

Commencement next week, and your undergraduate days are about to close. The baccalaureate preacher and commencement orator have their addresses already written,—at least they know in substance what they are going to say. So do I, for there is seldom any marked departure from the stereotyped discourse. With flattering references to your “trained minds” and “stores of learning,” they will congratulate you young women as a superior order of creatures. In graceful language they will bid you “go forth” to be blessings in the home and the community. For an hour all of you will feel unusually elated, but in your four years you have heard so many sermons, addresses, and lectures that you are now practically immune. Eloquent discourses before the graduating class will be fatally blurred by the toasts of the class supper. May I put in one or two remarks—of course equally likely to be forgotten—that your distinguished guests will on no account make? Recover yourself from the conceit that you are an important person because you are a college graduate. That girl who spends the long day tying up

bread and cakes in a city grocery probably has as good a mind as you have,—perhaps a better one. Inquire into the circumstances of the great multitude of wage-earning young women, then put their circumstances alongside those of your classmates. All things taken into account, do you think you will have any special claim on the high regard and admiration of the community by virtue of being an alumna of this or that college? Is it so meritorious to be for four years a member of the academic club and so highly creditable to learn lessons to a passing extent? You have lived for a while in a uniquely constituted community, all of whose members have sufficient food and wear good clothes, where there is light and warmth, books and music and pictures,—enough and more than enough; where there is exemption from responsibility and from the necessity of initiative, and where there is freedom from the cares, the sorrows, and the dangers that beset many young women's lives. Depart quietly. The real test of you is yet to come. And, if you are to verify your credentials, you will begin by dismissing, once for all, the notion that a sort of *ex-officio* value attaches to you and your doings.

So far as I have written about your studies, these letters are exactly what I should write to your brother.

You are both human beings. You alike need the knowledge that makes life rich and wholesome, and you alike need careful training in observation and in the processes of legitimate inference. But over and above all this, I must now say something especially for you because you are a woman.

Many persons are reconciled to the woman's college and to the woman's presence in other colleges and in the universities because, deep in their hearts, they are satisfied that a college career will not make any vital change in her. She will be mentally dependent and biddable just the same. She will be as aimless in her life, as much given to personalities, as much occupied with the little entertainments and so-called duties of the present moment, as if she had never heard of the B.A. degree or successfully encountered its conditions. She may even be trusted to become a doctor of philosophy, for she will probably take keen delight in bridge whist in spite of a doctorate. College girls have their attention directed from time to time to the importance of little things,—it is a favorite theme when girls and women compose an audience. But, once out in the world, your enemies, if you have any, need wish you nothing worse than this,—that each day shall be spent in trifles: idle gossip and idler reverie; the

new novel, the latest magazine; conventional social "duties,"—dressing, calling, dinners; a little church work, various women's club functions. Devote yourself to these things, and the world that you are "out in" will approvingly leave you in peace. That world will say it never "hurt you to go to college." But, if any large per cent. of women, in college and out, were suddenly to manifest a marked determination to be intellectually independent and self-reliant, to summon custom to account instead of submitting to the tyrant, to set some value on themselves for themselves and for the community, dismay would seize the worshippers of Things as They Are, and they would scruple at nothing to reduce these women to the usual condition of obedience.

As regards being useful to your country and to mankind, you may notice that there are two classes of service,—the service of relief and the service of reconstruction. One is paternal, the other fraternal. One is marked by compassion, the other by justice. One filters a cup of impure water to make it wholesome; the other goes to the fountain head and cleanses the stream at its source. One reads to the ignorant; the other teaches the ignorant to read. One is satisfied to suppress symptoms; the other aims to destroy the dis-

ease germs in the body of the community. You can make your choice between these classes of service or you can take a share in each. However you may interpret duty to the community, this much remains true: you cannot be too alert in doing one person's part to safeguard and promote priceless results that characterize our civilization on its non-material side,—results that have cost centuries of struggle and sacrifice. "They will burn no more Brunos." They will, though, unless everlasting watch be kept. Such precious things as free speech and a free press and the right of assembly may seem to you secure, at least here in your native land. It is not so. Consider your own status as a political outlaw. The determination to keep you one is ominous of a wider determination to deprive, if possible, various classes of men of the rights they now enjoy. I may as well warn you that the habitual viewing of acts as just or unjust is liable to place you, sooner or later, among those who, under the compelling power of the idea of democracy, render the service of reconstruction. Comradeship with them involves certain costs, possible perils. Nevertheless, you are to be congratulated if, taking a long look ahead and another long look into the past, you accept the risk and welcome the comradeship.

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“Where the vanguard camps to-day,  
The rear shall camp to-morrow.”

Besides your life in the world and for it is that life with yourself. Perhaps in your reading you have already come across these words of Lecky's:—

Women rarely love truth, though they love passionately what they call “the truth,” or opinions they have received from others. They are little capable of impartiality or of doubt; their thinking is chiefly a mode of feeling; though very generous in their acts, they are rarely generous in their opinions or in their judgments. They persuade rather than convince, and value belief rather as a source of consolation than as a faithful expression of the reality of things.

This analysis suggests the most searching examination that can ever be made of the effect of academic years on one's inmost life. Do you emerge from all the opportunities for training and learning only to love passionately opinions you have received from others? Do you regard persuasion as an allowable substitute for conviction, and is your thinking chiefly a mode of feeling? I look to you to show that it is not so. You are called to be one of the women who offer, not a protest against Lecky's affirmatives, but evidence that shall break down their universal quality. From Hypatia to Harriet Martineau and Marie Curie there have been

enough such women to afford perpetual inspiration to the rest of us. The life that you entered upon so gladly four years ago has justified itself if you have really discovered in experience the joy of the search for knowledge, and if yours is a free mind at home in the universe.

Until I write again,

*Prosit!*

E. H.

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